

Notice of Allowability

Application No.

10/626,858

Examiner

Suchin Parihar

Applicant(s)

HSU ET AL.

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to telephone conversation with Michael E. Fogarty (Reg.#36,139) on 12/13/2006.
2. ☒ The allowed claim(s) is/are 1-3, 5-11, 13-19, 21-27 and 29-30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date same as this action
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Paul Dinh
PAUL DINH
PRIMARY EXAMINER

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Michael E. Fogarty (Reg. #36,139) on 12/13/2006.

The application has been amended as follows:

In the claims

3. **In claim 1 line 4:** after "pattern", insert - -wherein said background areas do not contain any features to be imaged on said substrate- -
In claim 1 line 5: after "mask", insert - -using a sub-resolution grating block- -
In claim 1 line 7: after "mask", insert - -using a sub-resolution grating block- -
In claim 1 line 8: replace "said background area" with - -said background areas, wherein said non-resolvable horizontally oriented features and said non-resolvable vertically oriented features significantly reduce the negative effects of lens flare and improve dipole imaging performance- -
In claim 9 line 3: after "pattern", insert - -wherein said background areas do not contain any features to be imaged on said substrate- -
In claim 9 line 4: after "mask", insert - -using a sub-resolution grating block- -
In claim 9 line 6: after "mask", insert - -using a sub-resolution grating block- -

Art Unit: 2825

In claim 9 line 7: replace "said background area" with - -said background areas, wherein said non-resolvable horizontally oriented features and said non-resolvable vertically oriented features significantly reduce the negative effects of lens flare and improve dipole imaging performance- -

In claim 19 line 3: after "pattern", insert - -wherein said background areas do not contain any features to be imaged on said substrate- -

In claim 19 line 4: after "mask", insert - -using a sub-resolution grating block- -

In claim 19 line 6: after "mask", insert - -using a sub-resolution grating block- -

In claim 19 line 7: replace "said background area" with - -said background areas, wherein said non-resolvable horizontally oriented features and said non-resolvable vertically oriented features significantly reduce the negative effects of lens flare and improve dipole imaging performance- -

In claim 25 line 6: after "pattern", insert - -wherein said background areas do not contain any features to be imaged on said substrate- -

In claim 25 line 7: after "mask", insert - -using a sub-resolution grating block- -

In claim 25 line 9: after "mask", insert - -using a sub-resolution grating block- -

In claim 25 line 10: replace "said background area" with - -said background areas, wherein said non-resolvable horizontally oriented features and said non-resolvable vertically oriented features significantly reduce the negative effects of lens flare and improve dipole imaging performance- -

In claim 25 line 5: replace "comprising the steps of:" with - -,which when executed by the computer, perform the steps comprising- -

Art Unit: 2825

Cancel claims 4, 12, 20 and 28

With respect to the cancellation of claims 4, 12, 20 and 28, the subject matter of these claims has been incorporated into claims 1, 9, 19 and 25 respectively. Therefore, claims 4, 12, 20 and 28 do not further limit the subject matter of their respective parent claims, and must be cancelled in order to place this application into a condition for allowance.

(This Examiner's amendment has been made in order to place the application in a condition for allowance)

Reasons For Allowance

4. The following is an examiner's statement of reasons for allowance:

Claims 1-3, 5-11, 13-19, 21-27 and 29-30 are allowed because the prior art made of record does not teach or suggest a method, computer program product, and apparatus for generating masks for printing a pattern having vertically oriented features and horizontally oriented features on a substrate utilizing dipole illumination as claimed in claim 1 and as similarly claimed in claims 9, 19 and 25, the method/program/apparatus having a combination of steps in claims 1, 9, 19 and 25 including:

identifying background areas contained in said pattern wherein said background areas do not contain any features to be imaged on said substrate;

generating a vertical component mask using a sub-resolution grating block comprising non-resolvable horizontally oriented features in said background areas; and

generating a horizontal component mask using a sub-resolution grating block comprising non-resolvable vertically oriented features in said background areas;

Art Unit: 2825

wherein said non-resolvable features significantly reduce the negative effects of lens flare and improve dipole imaging performance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suchin Parihar whose telephone number is 571-272-6210. The examiner can normally be reached on Mon-Fri, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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